

Kennedy/Jenks Consultants

Engineers & Scientists

421 SW 6th Avenue, Suite 1000
Portland, Oregon 97204
503-423-4000
FAX: 503-295-4901

18 May 2018

Mr. Jeremy Jennings
U.S. Environmental Protection Agency
1200 Sixth Avenue (ECL-111)
Seattle, Washington 98101

Subject: 2017 Annual Progress Report
South Tacoma Field, Tacoma, Washington
KJ 1796126.00 and 966124.34

Dear Mr. Jennings:

On behalf of BNSF Railway Company, enclosed is the 2017 Annual Progress Report for the South Tacoma Field site. Inspection and sampling activities were conducted in December 2017 to evaluate current conditions at the site. **We request consideration in deleting the Amsted portion of the site from the National Priorities List as constituents of concern have not been reported in groundwater above cleanup levels over the past 13 years.**

Please call us at (503) 423-4000 if you have questions regarding the information contained herein.

Very truly yours,

KENNEDY/JENKS CONSULTANTS


Steve Misner, Lg, LHg
Project Manager


Todd Miller
Principal Hydrogeologist

Enclosures

cc: Ed Brosius, Amsted Industries
Scott MacDonald, BNSF (PDF)
Dava Kaitala, BNSF (PDF)
Doug Rhine, R.W. Rhine

Progress Report

SITE NAME: South Tacoma Field, Tacoma, Washington

PREPARED BY: Kennedy/Jenks Consultants

REPRESENTING: Amsted Industries and BNSF Railway Company

DATE: Reporting Year 2017

REPORTING PERIOD:

a. Progress made this reporting period, including problems encountered and recommendations:

Kennedy/Jenks Consultants (Kennedy/Jenks) completed one groundwater monitoring event in December 2017 at the BNSF Railway Company (BNSF) South Tacoma Field (STF) and former Amsted Industries sites. Depth to groundwater measurements were collected on 5 December 2017 and monitoring wells were sampled on 4, 5, 6, and 20 December 2017. Groundwater elevations and field water quality parameters are summarized in Tables 1 and 2. Analytical laboratory results are summarized in Tables 3 and 4. Figure 1 illustrates the site maintenance grids. Figure 2 displays the STF and Amsted monitoring well locations and Figure 3 displays the Pioneer monitoring well locations.

The groundwater samples collected from monitoring wells STM-3A and STM-4A contained dissolved lead concentrations of 24.3 micrograms per liter ($\mu\text{g}/\text{L}$) and 116 $\mu\text{g}/\text{L}$, which exceed the U.S. Environmental Protection Agency (EPA) Maximum Contaminant Level (MCL) of 15 $\mu\text{g}/\text{L}$. The turbidity measured in monitoring wells STM-3A and STM-4A is generally higher than turbidity observed in other Site monitoring wells and the total lead concentration appears to correlate with turbidity, indicating that the lead concentrations may be a function of suspended sediment rather than representative of true groundwater conditions. The remaining groundwater samples collected during the December 2017 sampling event contained lead at concentrations less than the MCL. Based on an evaluation of the lead analytical dataset, the following observations are made:

- Lead has not been reported or has not exceeded the MCL in any of the samples collected from nine of the 11 monitoring wells, where lead is a constituent of concern (COC), since monitoring began approximately 17 years ago with the exception of a concentration of 22 $\mu\text{g}/\text{L}$ identified in the sample collected in October 2001 from monitoring well VMW-1.
- The presence of lead at concentrations exceeding the MCL appears to be isolated to monitoring wells STM-3A and STM-4A, which have the highest measured turbidity of any of the wells on Site.

Gasoline range organics (GRO) were reported in the samples collected from monitoring wells NMW-1A and NMW-10A at concentrations of 0.90 milligrams per liter (mg/L) and 0.174 mg/L, respectively, which are both less than the Model Toxics Control Act (MTCA)

Method A cleanup level of 1 mg/L. No GRO was reported in any of the other samples collected during the December 2017 event. Diesel- and oil-range organics (DRO and ORO) were reported in the sample collected from monitoring well NMW-1A at concentrations above the laboratory reporting limit but less than the MTCA Method A cleanup level of 0.5 mg/L. The DRO concentrations reported in samples collected from monitoring wells NMW-9A, NMW-10A, NMW-11A, and CBS-4A are estimated values above the laboratory detection limit and less than the laboratory reporting limit. No DRO was detected in the samples collected from monitoring wells NMW-8A1, MW-1A, or VMW-1. ORO was reported in the sample collected from monitoring well NMW-9A at a concentration above the laboratory detection limit and less than the MTCA Method A cleanup level. The ORO concentrations reported in samples collected from monitoring wells NMW-10A and NMW-11A are estimated values above the laboratory detection limit and less than the laboratory reporting limit. No ORO was detected in any of the other samples collected during the December 2017 event.

Volatile organic compounds (VOCs) were reported in low concentrations in the groundwater samples collected from monitoring wells NMW-1A, NMW-10A, and NMW-11A. None of the VOC concentrations exceed their respective MTCA Method A cleanup levels. GRO, DRO, ORO, and VOC concentrations in the samples collected from monitoring well NMW-1A exhibit a decreasing trend over the last 10 years.

Low concentrations of polycyclic aromatic hydrocarbons (PAHs) were reported in groundwater samples collected from monitoring wells MW-1A, CBS-4A, and VMW-1 including acenaphthene, fluorene, and naphthalene. However, no carcinogenic PAHs were detected in any of the samples. Benzo(b)fluorene was reported in the method blank at a concentration of 0.00382 µg/L. Benzo(b)fluorene was also reported in the samples collected from monitoring wells MW-1A and CBS-4A but at concentrations lower than were reported in the method blank. Therefore, benzo(b)fluorene is considered to be not present in the groundwater samples collected from wells MW-1A and CBS-4A.

Groundwater elevations observed during the December 2017 sampling event were higher than in December 2016.

Kennedy/Jenks completed one site inspection (December 2017) in accordance with Operations & Maintenance (O&M) Plan requirements. The inspection report is provided in Attachment A. Several breaks in fence fabric were observed and will be repaired in 2018 (see inspection report). Minor vehicle rutting was observed near the access gate to the north consolidation area within grids where the lead concentration is below the capping level.

b. Anticipated problem areas and recommended solutions, including technical and scheduling information:

Under the current site management program, there are no anticipated problem areas of the site. Well security and fencing conditions will continue to be monitored during annual inspections. Ponding in maintenance grids will continue to be monitored during annual inspections to assess cap erosion. Public access to previously non-fenced areas has been limited by new fencing. Caps are intact, limiting exposure.

c. Problems resolved including results obtained relating to previously identified problem areas.

None were identified.

- d. Deliverables submitted, including dates of completion, deliverable anticipated to be submitted with next report, and reasons due dates for any future deliverables may need to be revised. Delays should be fully explained:**

2016 annual report was submitted in August 2017.

- e. Upcoming event/activities planned, including field surveys, meetings, etc., and all major tasks to be performed within the next reporting period:**

- Conduct annual inspection in December 2018
- Perform annual groundwater monitoring in December 2018
- Inspect monitoring wells and grid markers; replace missing grid markers as necessary
- Replace signs at former Amsted property, if necessary
- Conduct minor fence fabric repairs as necessary.

- f. Key staffing changes, including consultant, contractor, or subcontractor personnel:**

None in 2017.

- g. Reports, including identification of daily reports, inspection reports, laboratory/monitoring data, etc., that are available for review if requested by EPA:**

- Tables 1 through 4 summarize the groundwater elevation, field parameters, and analytical results. The laboratory analytical reports are available at Kennedy/Jenks Consultants' office.
- The annual inspection report is provided in Attachment A.

Tables

Table 1: Depth to Groundwater and Groundwater Elevations

South Tacoma Field Site

Well Designation	Date of Measurement	Top of Casing Elevation (feet above MSL)^(a)	Measured Depth to Water (feet from top of casing)	Groundwater Elevation (feet above MSL)
Pioneer Builders Supply Monitoring Wells				
NMW-1A	May 1999	252.66	30.66	222.00
	August 1999	252.66	31.08	221.58
	1/21/2000	252.66	29.22	223.44
	October 2001	252.66	32.01	220.65
	October 2002	252.66	31.96	220.70
	12/29/2004	252.66	34.17	218.49
	1/10/2006	252.66	32.84	219.82
	1/11/2007	252.66	30.58	222.08
	12/26/2007	252.66	29.86	222.80
	12/21/2010	252.66	25.72	226.94
	1/25/2012	252.66	25.09	227.57
	12/27/2012	252.66	23.51	229.15
	1/30/2014	252.66	27.12	225.54
	12/19/2014	252.66	25.66	227.00
	1/6/2016	252.66	28.96	223.70
	12/06/2016	252.66	25.08	227.58
	12/04/2017	252.66	23.34	229.32
NMW 8A	May 1999	253.89	29.65	224.24
	August 1999	253.89	32.19	221.70
	1/21/2000	253.89	30.44	223.45
	October 2001	253.89	31.17	222.72
	October 2002	253.89	33.13	220.76
	12/29/2004	253.89	35.91	217.98
	1/10/2006	253.89	33.84	220.05
	1/11/2007	253.89	31.89	222.00
	12/26/2007	253.89	31.08	222.81
	12/21/2010	253.89	27.07	226.82
	1/25/2012	253.89	26.46	227.43
	12/27/2012	253.89	24.96	228.93
	1/30/2014	253.89	28.49	225.40
	12/19/2014	253.89	28.98	224.91
	1/6/2016	253.89	30.28	223.61
NMW 8A1 ^(b)	1/6/2016	252.34	29.64	222.70
	12/06/2016	252.34	24.83	227.51
	12/04/2017	252.34	23.34	229.00
NMW 9A	May 1999	252.64	29.66	222.98
	August 1999	252.64	32.23	220.41
	1/21/2000	252.64	30.28	222.36
	October 2001	252.64	33.23	219.41
	October 2002	252.64	33.13	219.51
	12/29/2004	252.64	36.08	216.56
	1/10/2006	252.64	33.42	219.22
	1/11/2007	252.64	30.21	222.43
	12/26/2007	252.64	29.77	222.87
	12/21/2010	252.64	25.61	227.03
	1/25/2012	252.64	24.96	227.68
	12/27/2012	252.64	23.56	229.08
	1/30/2014	252.64	27.21	225.43
	12/19/2014	252.64	25.74	226.90
	1/6/2016	252.64	28.95	223.69
	12/06/2016	252.64	25.09	227.55
	12/04/2017	252.64	23.59	229.05

Table 1: Depth to Groundwater and Groundwater Elevations
South Tacoma Field Site

Well Designation	Date of Measurement	Top of Casing Elevation (feet above MSL) ^(a)	Measured Depth to Water (feet from top of casing)	Groundwater Elevation (feet above MSL)
NMW-17A1	4/1/1999	246.06	23.30	222.76
	October 2000	246.06	25.12	220.94
	October 2001	246.06	26.09	219.97
	October 2002	246.06	26.68	219.38
	12/29/2004	246.06	28.89	217.17
	1/11/2007	246.06	26.98	219.08
	12/21/2010	246.06	26.92	219.14
	1/25/2012	246.06	25.83	220.23
	12/27/2012	246.06	23.96	222.10
	1/30/2014	246.06	21.56	224.50
	12/19/2014	246.06	19.43	226.63
	1/6/2016	246.06	24.03	222.03
	12/06/2016	246.06	19.38	226.68
	12/05/2017	246.06	18.01	228.05
STM-1A	4/1/1999	NA	NM	NC
	October 2000	NA	NM	NC
	October 2001	NA	NM	NC
	October 2002	NA	NM	NC
	12/29/2004	NA	NM	NC
	1/11/2007	NA	NM	NC
	12/21/2010	NA	NM	NC
	1/25/2012	NA	NM	NC
	12/27/2012	NA	NM	NC
	1/30/2014	NA	NM	NC
	12/19/2014	NA	NM	NC
STM-1A ^(g)	1/6/2016	254.9	31.60	223.30
	12/06/2016	254.9	27.63	227.27
	12/04/2017	254.9	26.12	228.78
Amsted Monitoring Wells				
CBS-4A	4/1/1999	251.94	28.01	223.93
	October 2000	251.94	31.16	220.78
	October 2001	251.94	28.30	223.64
	October 2002	251.94	31.83	220.11
	12/29/2004	251.94	29.72	222.22
	1/11/2007	251.94	28.11	223.83
	12/21/2010	251.94	24.56	227.38
	1/25/2012	251.94	23.96	227.98
	12/27/2012	251.94	22.37	229.57
	1/30/2014	251.94	26.59	225.35
	12/19/2014	251.94	25.12	226.82
	1/6/2016	251.94	28.27	223.67
	12/06/2016	251.94	24.35	227.59
	12/05/2017	251.94	22.93	229.01

Table 1: Depth to Groundwater and Groundwater Elevations
South Tacoma Field Site

Well Designation	Date of Measurement	Top of Casing Elevation (feet above MSL) ^(a)	Measured Depth to Water (feet from top of casing)	Groundwater Elevation (feet above MSL)
MW-1A	4/1/1999	243.33	19.80	223.53
	October 2000	243.33	22.77	220.56
	October 2001	243.33	19.68	223.65
	October 2002	243.33	23.59	219.74
	12/29/2004	243.33	21.26	222.07
	1/11/2007	243.33	16.40	226.93
	12/21/2010	243.33	14.98	228.35
	1/25/2012	243.33	12.62	230.71
	12/27/2012	243.33	11.86	231.47
	1/30/2014	243.33	18.05	225.28
	12/19/2014	243.33	16.49	226.84
	1/6/2016	243.33	18.81	224.52
	12/06/2016	243.33	15.88	227.45
	12/05/2017	243.33	13.62	229.71
VMW-1	4/1/1999	236.75	13.08	223.67
	October 2000	236.75	16.05	220.70
	October 2001	236.75	16.95	219.80
	October 2002	236.75	16.79	219.96
	12/29/2004	236.75	17.36	219.39
	1/11/2007	236.75	12.99	223.76
	12/21/2010	236.75	9.06	227.69
	Jan-12	236.75	7.47	229.28
	12/27/2012	236.75	7.14	229.61
	1/30/2014	236.75	11.59	225.16
	12/19/2014	236.75	10.11	226.64
	1/6/2016	236.75	13.18	223.57
	12/06/2016	236.75	9.44	227.31
	12/05/2017	236.75	17.01	219.74

Notes:

- (a) MSL = mean sea level
- (b) Monitoring well NMW-8A was replaced by monitoring well NMW-8A1 in January 2016.
- (c) NA = No elevation is available
- (d) NM = Not measured
- (e) NC = Elevation not calculated
- (f) Monitoring well NMW-11 was replaced by monitoring well NMW-11A in 2006.
- (g) Monitoring well STM-1A was replaced by monitoring well STM-1A1 in January 2016.

Table 2: Field Measured Groundwater Parameters

South Tacoma Field Site

Well Designation	Date of Measurement	pH	Temperature (Celsius°)	Turbidity (NTU) ^(a)	Specific Conductance (mS/cm) ^(b)
Pioneer Builders Supply Monitoring Wells					
NMW-1A	12/04/2017	6.34	11.6	6.1	342
NMW 8A1	12/04/2017	6.40	11.6	6.7	184
NMW 9A	12/04/2017	6.50	13.3	18.0	0.38
NMW 10A	12/04/2017	6.75	12.8	5.8	366
NMW 11A	12/6/2017	6.00	10.7	0.0	157
STF Monitoring Wells					
STM-3A	12/05/2017	7.03	12.2	80.8	315
STM-4A	12/05/2017	6.89	11.4	73.0	265
CBS-7A	12/06/2017	7.37	12.3	2.7	172
CBS-10A	12/06/2017	6.93	14.6	0.0	246
VMW-2	12/06/2017	6.09	12.4	0.0	111
VMW-3	12/06/2017	6.09	10.3	0.0	99
NMW-17A1	12/05/2017	6.29	10.7	6.1	199
STM-1A1	12/4/2017	6.92	11.7	4.6	109
Amsted Monitoring Wells					
MW-1A	12/05/2017	6.57	9.0	4.3	89
CBS-4A	12/05/2017	7.12	12.1	6.2	216
VMW-1	12/05/2017	6.02	9.2	6.0	107

Notes:

(a) NTU = Nephelometric turbidity unit

(b) mS/cm = microSiemens per centimeter

Table 3: Groundwater Analytical Results

South Tacoma Field Site

Monitoring Well	Date Sampled ^(a)	Total Lead ^(b) ($\mu\text{g}/\text{L}$) ^(c)
South Tacoma Field Monitoring Wells		
STM-1A	April 2000	5.00
	October 2000	11.0
	October 2001	<1.00 ^(d)
	October 2002	NA ^(e)
	12/29/2004	NA
	1/10/2006	NA
	1/11/2007	NA
	12/26/2007	NA
	12/29/2008	NA
	1/27/2010	NA
	12/21/2010	NA
	1/25/2012	NA
	12/27/2012	NA
	1/30/2014	NA
STM-1A1 ^(f)	1/6/2016	<2.00
	12/06/2016	<2.00
	12/04/2017	0.873 B J
STM-3A	April 2000	5.00
	October 2000	1.00
	October 2001	3.00
	October 2002	1.39
	12/29/2004	2.26
	1/10/2006	2.56
	1/11/2007	6.02
	12/26/2007	<1.00
	12/29/2008	<1.00
	1/27/2010	8.90
	12/21/2010	19.9
	1/25/2012	16.3
	12/27/2012	130.0
	1/30/2014	25.0
	12/19/2014	17.0
	1/6/2016	5.73
STM-4-A / STM-100 ^(g)	12/06/2016	21.2
	12/05/2017	24.3
	April 2000	16.0/18.0
	October 2000	10.0/9.00
	October 2001	4.00/3.00
	October 2002	9.95/8.26
	12/29/2004	2.80/6.85
	1/10/2006	13.3/7.82
	1/11/2007	8.21/8.96
	12/26/2007	3.95/4.16
	12/29/2008	13.2
	1/27/2010	15.0/19.0
	12/21/2010	50.4/45.6
	1/25/2012	74.5/70.8
	12/27/2012	260.0 / 290.0
	1/30/2014	46 / 56
	12/19/2014	40 / 38
	1/6/2016	5.95 / 5.08
	12/06/2016	31.9 / 27.5
	12/05/2017	116/88.3

Table 3: Groundwater Analytical Results

South Tacoma Field Site

Monitoring Well	Date Sampled ^(a)	Total Lead ^(b) (µg/L) ^(c)
CBS-7A	April 2000	<1.00
	October 2000	5.00
	October 2001	<1.00
	October 2002	1.17
	12/29/2004	1.07
	1/10/2006	<1.00
	1/11/2007	<1.00
	12/26/2007	7.26
	12/29/2008	2.03/2.71
	1/27/2010	9.80
	12/21/2010	0.92
	1/25/2012	0.69
	12/27/2012	<1.00
	1/30/2014	3.8
	12/19/2014	<2.00
CBS-9A ^(h)	1/6/2016	6.78
	12/06/2016	3.22
	12/06/2017	3.49 B
CBS-10A	April 2000	<1.00
	October 2000	<1.00
	April 2000	8.00
	October 2000	<1.00
	October 2001	<1.00
	October 2002	5.37
	12/29/2004	2.48
	1/10/2006	1.45
	1/11/2007	1.17
	12/26/2007	<1.00
	12/29/2008	<1.00
	1/27/2010	<2.00
	12/21/2010	0.76
	1/25/2012	0.61
	12/27/2012	<1.00
VMW-2	1/30/2014	<1.00
	12/19/2014	<2.00
	1/6/2016	2.26
	12/06/2016	<2.00
	12/06/2017	2.47 B
	April 2000	6.00
	October 2000	9.00
	October 2001	4.00
	October 2002	18.20
	12/29/2004	<1.00
	1/10/2006	4.00
	1/11/2007	<1.00
	12/26/2007	9.73
	12/29/2008	1.59
	1/27/2010	<2.00
	12/21/2010	3.20
	1/25/2012	6.30
	12/27/2012	<1.00
	1/30/2014	<1.00
	12/19/2014	<2.00
	1/6/2016	<2.00
	12/06/2016	<2.00
	12/06/2017	1.02 B J

Table 3: Groundwater Analytical Results

South Tacoma Field Site

Monitoring Well	Date Sampled^(a)	Total Lead^(b) (µg/L)^(c)
VMW-3	April 2000	2.00
	October 2000	18.00
	October 2001	2.00
	October 2002	2.92
	12/29/2004	6.43
	1/10/2006	6.41
	1/11/2007	7.56
	12/26/2007	<1.00
	12/29/2008	<1.00
	1/27/2010	<2.00
	12/21/2010	1.40
	12/27/2012	14.40
	1/30/2014	<1.00
	12/19/2014	<2.00
	1/6/2016	<2.00
	12/06/2016	<2.00
	12/06/2016	0.777 B J
NMW-17A	April 2000	<1.00
	October 2000	<1.00
	October 2001	2.00
	October 2002	<1.00
	12/29/2004	<1.00
	1/10/2006	<1.00
	1/11/2007	<1.00
	12/26/2007	<1.00
	12/29/2008	<1.00
	1/27/2010	<2.00
	12/21/2010	<1.00
	12/27/2012	<1.00
	1/30/2014	<1.00
	12/19/2014	<2.00
	1/6/2016	<2.00
	12/06/2016	<2.00
	12/05/2017	2.36 B
Amsted Monitoring Wells		
MW-1A	April 2000	<1.00
	October 2000	<2.00
	October 2001	<1.00
	October 2002	1.24
	12/29/2004	<1.00
	1/10/2006	<1.00
	1/11/2007	<1.00
	12/26/2007	<1.00
	12/29/2008	<1.00
	1/27/2010	<2.00
	12/21/2010	0.45
	12/27/2012	<1.00
	1/30/2014	<1.00
	12/19/2014	<2.00
	1/6/2016	<2.00
	12/06/2016	<5.00
	12/05/2017	1.76 B J

Table 3: Groundwater Analytical Results

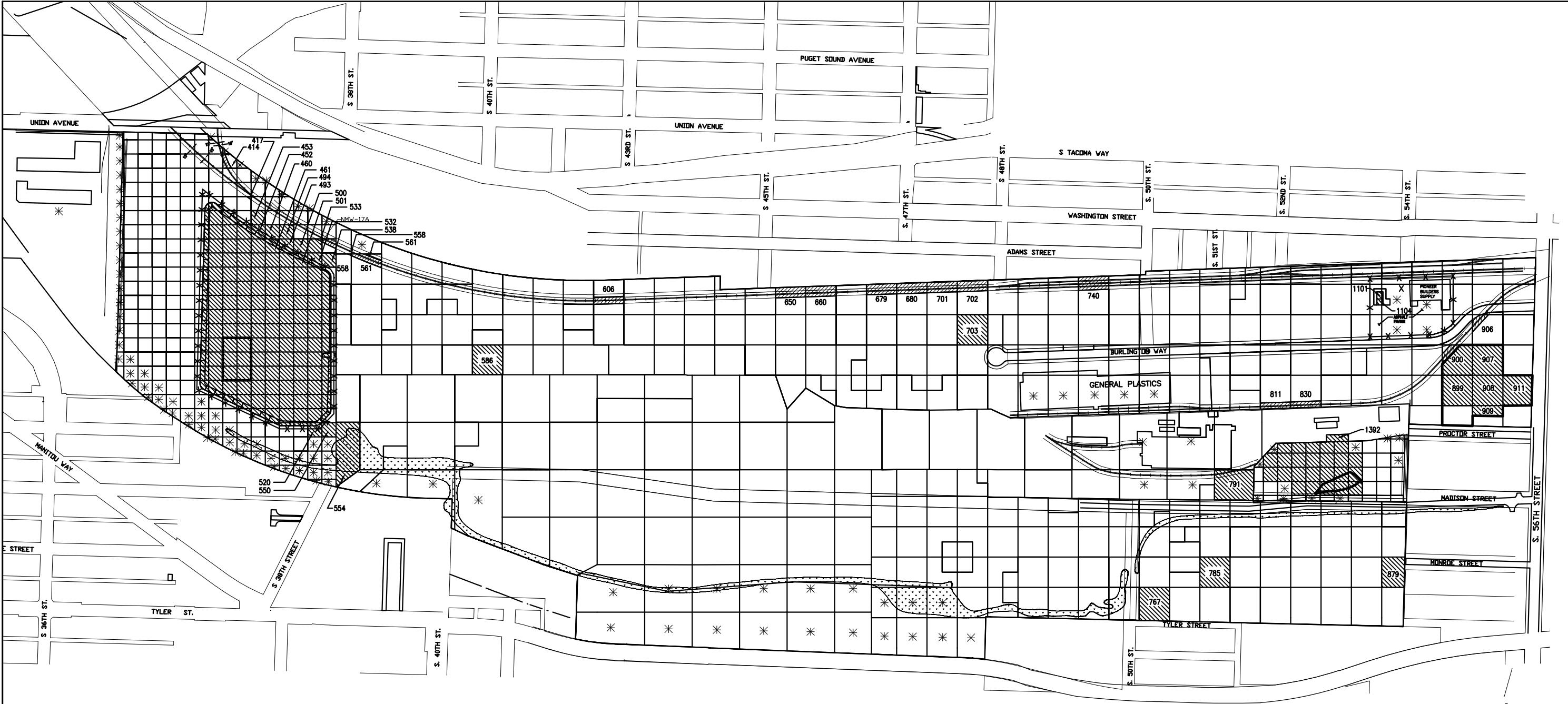
South Tacoma Field Site

Monitoring Well	Date Sampled ^(a)	Total Lead ^(b) ($\mu\text{g/L}$) ^(c)
CBS-4A	April 2000	<1.00
	October 2000	<1.00
	October 2001	<1.00
	October 2002	<1.00
	12/29/2004	<1.00
	1/10/2006	<1.00
	1/11/2007	<1.00
	12/26/2007	<1.00
	12/29/2008	<1.00
	1/27/2010	<2.00
	12/21/2010	<0.10
	12/27/2012	<0.10
	1/30/2014	<1.00
	12/19/2014	<2.00
	1/6/2016	<5.00
VMW-1	12/06/2016	<2.00
	12/05/2017	1.47 B J
	April 2000	5.00
	October 2000	4.00
	October 2001	22.0
	October 2002	<1.00
	12/29/2004	<1.00
	1/10/2006	<1.00
	1/11/2007	<1.00
	12/26/2007	<1.00
	12/29/2008	<1.00
	1/27/2010	<2.00
	12/21/2010	2.70
	12/27/2012	3.20
	1/30/2014	<1.00
	12/19/2014	<2.00
	1/6/2016	<5.00
	12/06/2016	<2.00
	12/05/2017	0.973 B J
EPA Maximum Contaminant Level ⁽ⁱ⁾		15.00

Notes:

- (a) The day of the month samples were collected is presented where known.
- (b) Groundwater Samples were analyzed for total lead using the U.S. Environmental Protection Agency (EPA) Method 6020.
- (c) $\mu\text{g/L}$ = micrograms per liter
- (d) < = Analyte not detected above the indicated laboratory detection limit.
B = The same analyte is found in the associated blank.
- J = The identification of the analyte is acceptable; the reported value is an estimate.
- (e) NA = Not analyzed
- (f) Monitoring well STM-1A was damaged and replaced by monitoring well STM-1A1 in January 2016.
- (g) Where two results are presented, the second is the duplicate sample result.
- (h) Monitoring well CBS-9A was abandoned in 2001 to accommodate construction activities.
- (i) EPA Maximum Contaminant Levels are provided in the Drinking Water Regulations under the Safe Drinking Water Act, as amended.

Figures

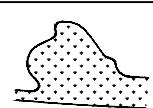


LEGEND

- ※ GRID NOT SAMPLED DURING RI OR RA
- 538 GRID ABOVE CAPPING LEVELS; COVERED WITH AT LEAST 1 FOOT OF SOIL OR CAPPED WITH ASPHALT; MAINTENANCE REQUIRED
- 606 GRID POTENTIALLY ABOVE CAPPING LEVELS; NOT REMEDIATED; SAFETY PRECAUTIONS REQUIRED

DISCLAIMER

NO WARRANTY IS ASSOCIATED WITH THE ACCURACY OF CHEMICAL DATA DEPICTED ON THIS MAP. CHEMICAL CONCENTRATIONS COULD BE HIGHER OR LOWER THAN SHOWN. PEOPLE WHO HANDLE SOIL AT THE SITE (I.E., CONTRACTORS) SHOULD TAKE CONSERVATIVE PRECAUTIONS TO PROTECT AGAINST EXPOSURE. CONTACT AN ENVIRONMENTAL PROFESSIONAL FOR ASSISTANCE.



DRAINAGE CHANNEL



RAILROAD TRACKS



FENCE



BURIED GEOTEXTILE; IDENTIFIES LIMIT OF TREATED OR CONTAMINATED SUBSURFACE SOIL

CAPPING LEVELS

ARSENIC	200 mg/kg
LEAD	1,000 mg/kg
cPAHs (TOTAL)	20 mg/kg
PCBs (TOTAL)	10 mg/kg

NOTE:

- 1) NO SAMPLING/REMEDIATION CONDUCTED WITHIN STRUCTURES, BURLINGTON WAY RIGHT OF WAY, OR PAVED AREAS; EXCEPT AS NOTED.

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SOUTH TACOMA FIELD
TACOMA, WA

MAINTENANCE GRIDS



APPROXIMATE SCALE IN FEET

006015.05/P9SK004

FIGURE 1



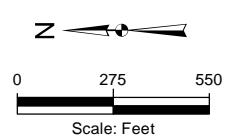
Legend

- Monitoring Wells
- ◆ Abandoned Monitoring Wells
- STF-NPL Site Boundary
- Area Boundaries
- Consolidation Area

Kennedy/Jenks Consultants

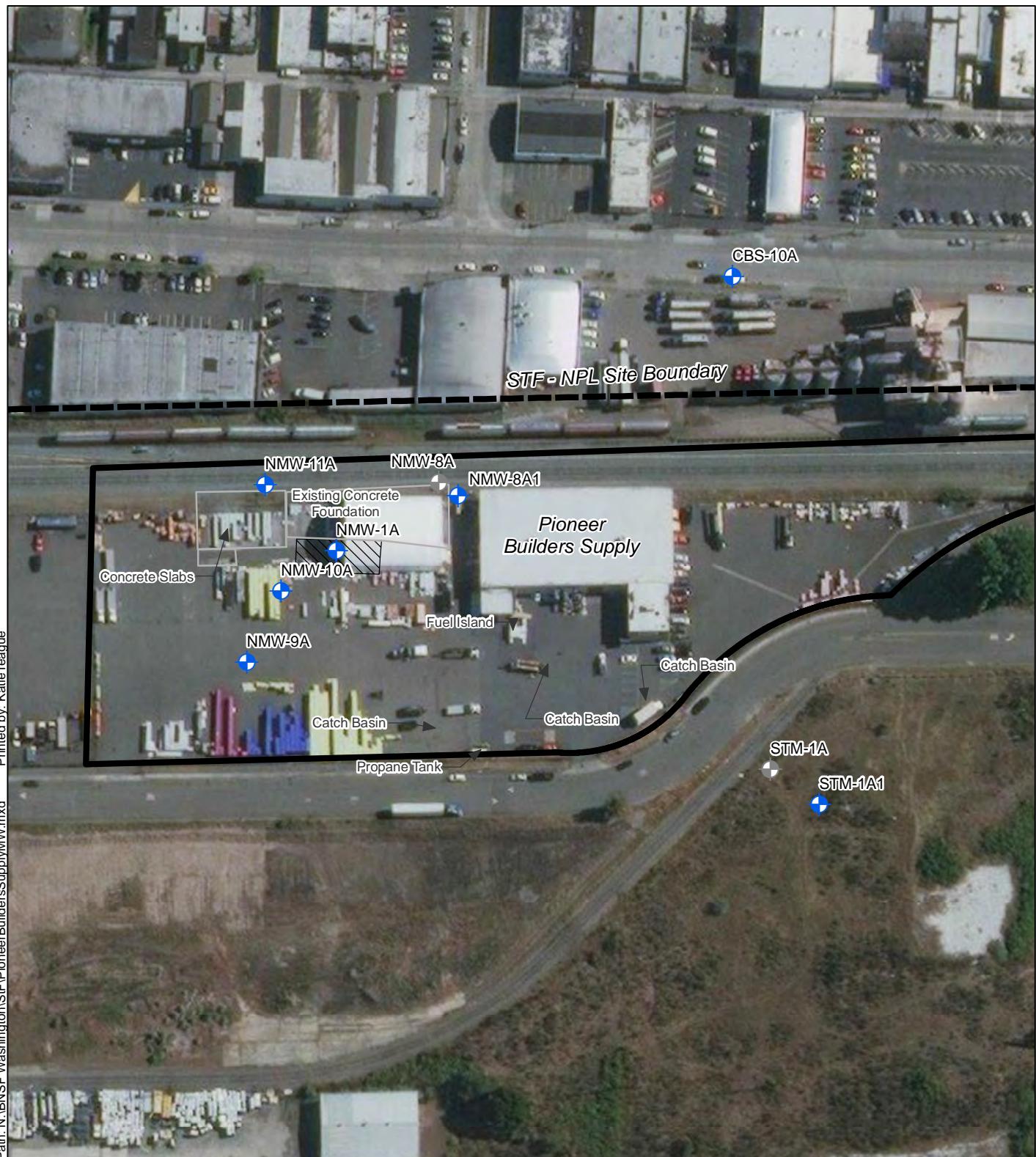
South Tacoma Field
Tacoma, Washington

Monitoring Well Locations



February 2018

Figure 2



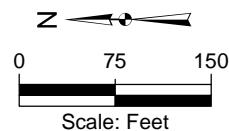
Source:
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Legend

Monitoring Wells

Abandoned Monitoring Wells



Pioneer Builders Supply Monitoring Well Locations

February 2018

Figure 3

South Tacoma Field
Tacoma, Washington

Attachment A

Annual Inspection Report

OPERATION AND MAINTENANCE INSPECTION REPORT FORM
SOUTH TACOMA FIELD SITE

Page 1 of 2

Inspection Date: December 4-6, 2017

Personnel: Alexander Leshner

ITEM	ITEMS TO MEASURE OR NOTE	OBSERVED CONDITIONS/MEASUREMENT	MAINTENANCE OR CORRECTIVE ACTION REQUIRED
1. Amsted Property Cover System			
Dead/damaged vegetation	If present, where?	Surface and vegetation cover on slope/swale on south side appear intact. Vegetation is encroaching on well locations, but they remain accessible.	Continue to clear vegetation around well during next sampling event. No other corrective action required at this time.
Settlement/ponding	If present, where?	Minor ponding is present locally, but with recent precipitation.	No corrective action required at this time
Side slopes sliding	If present, where?	None noted during inspection	No corrective action required at this time
Seismic activity damage	If present, where?	None noted during inspection	No corrective action required at this time
2. Amsted Property Drainage System			
Swales	Range of depth of sediment accumulation. Area and depth of high sediment build-up.	No evident accumulation. Vegetation cover is generally intact and thick.	No corrective action required at this time, monitor.
3. Amsted Property Site Security			
Fences	Location of deterioration or vandalism	Fences are generally intact, but breaks in the fence fabric are present at four locations. Two locations along the western fenceline (adjacent to Madison St. extension on Amsted property). One by well CBS-4A, south of General Plastics Building. One location on the east side of the Northern Consolidation Area near well NMW-17A1.	Breaks in fence fabric will be repaired in 2018.
Gates	Are gates operable?	All gates appear operable, although the access gate at MW-1A needs a new chain on the fence.	Replace chain at access gate to MW-1A.
Locks	Missing or not functioning?	All gates appear operable, although the access gate at MW-1A needs a new chain on the fence.	Replace chain at access gate to MW-1A.
Signs	Signs destroyed or vandalized?	Signs were not located.	Consider replacement of signs.
4. BNR Dismantling Yard Cover System			
Settlement/ponding	If present, where?	No settlement noted but surface of containment area was wet with standing water at some locations due to recent precipitation. Minor vehicle rutting observed near the entrance gate. Vegetation cover is generally in good condition and well established. Wells are accessible and intact, but access routes are becoming overgrown on slopes.	Continue to clear brush as needed to access wells during next sampling event. No other corrective action required at this time, monitor vegetation growth and rutting on roads.
Fissures	If present, where?	None noted during inspection	No corrective action required at this time
Side slopes sliding	If present, where?	None noted during inspection	No corrective action required at this time
Seismic activity damage	If present, where?	None noted during inspection	No corrective action required at this time
5. BNR Dismantling Yard Drainage System			
Swales	Range of depth of sediment accumulation. Area and depth of high sediment buildup.	No significant sediment accumulation noted at lowest elevations of swales. Ponding is present locally around the perimeter of the containment area from recent precipitation, but well monuments are not submerged.	No corrective action required at this time. Monitor.

Note: Photographs of site conditions included? No Yes

**OPERATION AND MAINTENANCE INSPECTION REPORT FORM
SOUTH TACOMA FIELD SITE**

Page 2 of 2

Inspection Date: December 4-6, 2017

Personnel: Alexander Lesher

ITEM	ITEMS TO MEASURE OR NOTE	OBSERVED CONDITIONS/MEASUREMENT	MAINTENANCE OR CORRECTIVE ACTION REQUIRED
6. BNR Dismantling Yard Security			
Fences, gates, locks, and signs.	Damaged, missing, inoperable?	Fences and gates are currently secure and functional.	No corrective action required at this time
7. Other Cover Systems - BNSF Grids 452, 453, 460, 461, 493, 494, 500, 501, 520, 532, 533, 538, 550, 554, 586, 703, 767, 785, 791, 879, 1101, 1104, 13927. Other Cover Systems - BNSF Grids 452, 453, 460, 461, 493, 494, 500, 501, 520, 532, 533, 538, 550, 554, 586, 703, 767, 785, 791, 879, 1101, 1104, 1392	Grid surfaces are generally in similar condition to the previous inspection with one exception, and vegetation cover is generally adequate. Some new debris/garbage accumulation has occurred, particularly on the southwestern portion of the Site, but is localized. Roads and ground surfaces have been rutted and disturbed at locations throughout the site due to previous off-road vehicle and motorcycle use, but the occurrence of new rutting, etc. has been greatly reduced since the site perimeter fence was installed (2010). Marker 554 has mostly disintegrated since being re-installed in 2016. This disintegration is likely caused by standing water in the area (see below). Markers 785 and 767 were not found and possibly covered by encroaching thick vegetation.	Monitor vegetative growth and surface conditions in all grids. Monitor condition of perimeter fence and entry gates, primarily in the vicinity of Burlington Way and Madison Street. Consider replacing grid marker 554 again in 2018 during driest season.	
Settlement / Ponding	If present, where?	Ponding is locally present throughout the Site due to recent precipitation, and is most notable near the Burlington Way access gate including grid 703 and just west of it, in the southwest portion of the site including grids 785 and 879, and around the northern and western consolidation area near grid 554. The areas on and near grid 703, around the UST wells, and east of the consolidation area remain rutted from light rail construction activities (completed in 2010). Ponding was also noted east of the Northern Containment Area. Markers 453, 493, and 494 were likely underwater and could not be found during inspection.	Monitor ponding and settlement conditions.
Fissures	If present, where?	None noted during inspection	No corrective action required at this time
Side slopes sliding / Erosion	If present, where?	Erosion around marker 500 was noted. This is likely due to ponding around it.	Monitor ponding and settlement conditions.
Seismic activity damage	If present, where?	None noted during inspection.	No corrective action required at this time
8. Other Areas Drainage System - Grids 899, 900, 907, 908, 909, 911			
Settlement / Ponding	If present, where?	No settlement or ponding noted. Minor ponding noted locally. The perimeter of area is blocked with Ecology blocks and fences.	Monitor vegetative growth and clear as needed for well access during next sampling event.
Drainage at the southern section of the BNR Railyard	Range of depth of sediment accumulation. Area and depth of high sediment buildup.	No significant sediment accumulation noted.	Monitor vegetative growth. Repair if cap erosion is apparent.
	Ponding, blocked drainage	No settlement noted.	No corrective action required at this time
9. Groundwater Monitoring Wells			
Damage/Vandalism	Which wells?	All groundwater monitoring wells are in good condition. The lock on monitoirng well MW-17A will be replaced as the current lock is rusty and broke off during monitoring.	Replace lock and hook attachment at MW-17A. No other corrective action required at this time.
10. Grid Markers			
Damage/Vandalism	Which markers?	Markers weremostly easy to locate due to stakes and recent brush clearing and replacement. Markers 453, 494, 554 (present but dissolved), 703, 767, 785 were not located.	Grid markers will be located and repaired or replaced as necessary in 2018. No other corrective action required at this time.
11. Other			
Site access		Access point on Burlington Way was secure and the lock was replaced. The Madison Street gate was secure at the time of inspection. The Monroe street access gate and fence were intact. The perimeter fence appears to be generally intact. A new lock was put on the gate at the Northern Consolidation Area.	Waste accumulation, abandoned vehicles, and off-road driving have been an ongoing issue at the site similar to the previous inspection. The fence and gates installed in 2010 appear to have generally mitigated these problems, but accumulation of waste is still evident locally. Periodic inspection of site access conditions is recommended.